

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/03179

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H03M13/41

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H03M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>CZAJA S ET AL: "Variable data rate Viterbi decoder with modified LOVA algorithm"            TENCON '95., PROCEEDINGS OF THE IEEE REGION 10 INTERNATIONAL CONFERENCE ON MICROELECTRONICS AND VLSI, HONG KONG, 6 - 10 November 1995, pages 472-475, XP010160164            ISBN: 0-7803-2624-5            page 474, last paragraph; figure 2            page 473, left-hand column, last paragraph            ---            -/-</p>	1,2,7,8, 13,14, 19,20,25

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the International filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the International filing date but later than the priority date claimed

\*T\* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the International search

Date of mailing of the International search report

10 February 2004

09.03.04

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel: (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Farman, T

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/03179

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BOUTILLON E ET AL: "VLSI ARCHITECTURES FOR THE MAP ALGORITHM" IEEE TRANSACTIONS ON COMMUNICATIONS, IEEE INC. NEW YORK, US, vol. 51, no. 2, February 2003 (2003-02), pages 175-185, XP001164390 ISSN: 0090-6778 page 182, right-hand column, line 8 -page 183, left-hand column, line 11 ---	3,9,15, 21
A	FETTWEIS G ET AL: "FEEDFORWARD ARCHITECTURES FOR PARALLEL VITERBI DECODING" JOURNAL OF VLSI SIGNAL PROCESSING SYSTEMS FOR SIGNAL, IMAGE, AND VIDEO TECHNOLOGY, KLUWER ACADEMIC PUBLISHERS, DORDRECHT, NL, vol. 3, no. 1 / 2, 1 June 1991 (1991-06-01), pages 105-119, XP000228897 ISSN: 0922-5773 the whole document ---	1,2,7,8, 13,14, 19,20
A	GB 2 305 827 A (MOTOROLA LTD) 16 April 1997 (1997-04-16) page 14, paragraph 2	1-25
A	page 10, line 4 -page 11, line 12 -----	3,9,15, 21 4-6, 10-12, 16-18, 22-24

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 03/03179

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-3,7-9,13-15,19-21,25

Claims 3,9,15 and 21 concern an implementation of the ACS portion of a Viterbi decoder with a first step of calculating path metrics and storing them only at the beginning of sections of a data block and a second step of recalculating the path metrics of a section using the stored path metrics as starting point of the section.

This invention reduces the processing in the ACS portion of a Viterbi decoder to a portion only of a data block, in particular in a two-pass list output viterbi decoder.

Claims 1,2,7,8,13,14,19,20 and 25 do not constitute any invention over the closest prior art (cf. below). They have been searched with this invention and are attached formally to the first invention.

2. Claims: 4-6,10-12,16-18,22-24

These claims concern an implementation of the traceback portion a Viterbi decoder in which traceback is started from a bad decision upon detection of an error.

This invention reduces the amount of traceback processing, in particular in a list output Viterbi decoder.

**INTERNATIONAL SEARCH REPORT**

International Application No

PCT/EP 03/03179

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
GB 2305827	A 16-04-1997	CN WO EP JP	1200849 A 9713327 A1 0855107 A1 11513544 T	02-12-1998 10-04-1997 29-07-1998 16-11-1999